

Construction Road Stabilization - CRS



DEFINITION

The use of construction specifications, techniques, and materials to stabilize soils on which a travel way is constructed as part of a construction plan. A travel way may include access roads, subdivision roads, parking areas, and other on-site vehicle transportation routes not accessible to public traffic.

PURPOSE

To provide a fixed route for construction traffic, and to reduce erosion and subsequent re-grading of permanent roadbeds between the time of initial grading and final stabilization.

CONDITIONS

This practice is applicable where travel ways are needed in a planned land use area or wherever stone-base roads or parking areas are constructed, whether permanent or temporary, for use by construction traffic.

PLANNING CONSIDERATIONS

Areas graded for construction vehicle transport and parking purposes are especially susceptible to erosion. The exposed soil is continually disturbed, eliminating the possibility of stabilization with vegetation. The prolonged exposure of the roads and parking areas to surface runoff can create severe rill erosion and/or sedimentation, requiring regrading before paving. The soil removed during this process may enter streams and other waters of the state, compromising water quality. Additionally, because unfinished roads become so unstable during wet weather, they are virtually unusable, limiting access, and causing delays in construction.

DESIGN CRITERIA

The application of this practice does not require formal design. The following standards should be used:

Temporary Roads and Parking Areas

Location: Temporary roads should be located to serve the purpose intended; facilitate the control and disposal of water; control or reduce erosion; and make the best use of topographic features. Temporary parking areas should be located on naturally flat areas to minimize grading.

Temporary roads should follow the contour of the natural terrain to minimize disturbance of drainage patterns. If a temporary road must cross a stream, the crossing must be designed, installed, and maintained according to specification **Temporary Stream Crossing** - **TSC**.

All stream crossings require authorization from the Tennessee Division of Water Pollution Control and United States Army Corps of Engineers prior to construction.

For more information, see Appendix C and:
<http://www.state.tn.us/environment/permit/s/arap.htm>

Grade and Alignment: The gradient and vertical and horizontal alignment should be adapted to the intensity of use, mode of travel, and level of development. Grades for temporary roads should not exceed ten percent except for very short lengths (200 feet or less), but maximum grades of 20 percent or more may be used if necessary for special uses. Frequent grade changes generally cause fewer erosion problems than long continuous gradients. Grades for temporary parking areas should be sufficient to provide drainage but should not exceed four percent.

Curves and switchbacks must be of sufficient radius for trucks and other large vehicles to negotiate easily. On temporary roads, the radius should be no less than 35 feet for standard vehicles and 50 feet for tractor-trailers.

Width: Temporary roadbeds should be at least 14 feet wide for one-way traffic and 20 feet wide for two-way traffic. The width for two-way traffic should be increased approximately four feet for trailer traffic. A minimum shoulder width should be two feet on each side. Where turnouts are used, road

width should be increased to a minimum of 20 feet for a distance of 30 feet.

Side Slopes: All cuts and/or fills should have side slopes designed to be stable for the particular site conditions and soil materials involved. All cuts and/or fills should be 2:1 or less, to the extent possible. When maintenance by machine mowing is planned, side slopes should be no steeper than 3:1.

Drainage: The type of drainage structure used will depend on the type of activity and runoff conditions. The capacity and design should be consistent with sound engineering principles and should be adequate for the class of vehicle, type of road, development, or use. Structures should be designed to withstand flows from a 25-year, 24-hour frequency storm. Ditches should be designed to be on stable grades and/or protected with structures or linings for stability.

Water breaks or bars may be used to control surface runoff on low-intensity use roads. Refer to specification **Diversion** - **DI**.

Stabilization: A 6-inch layer of coarse aggregate, such as TDOT #57, should be applied immediately after grading or the completion of utility installation within the right-of-way. In areas experiencing heavy traffic, stone should be placed at an 8 to 10 inch depth to avoid excessive dissipation or maintenance needs.

Geotextile should be applied beneath the stone for additional stability. Refer to specification **Geotextile** - **GE**.

All roadside ditches, cuts, fills, and disturbed areas adjacent to parking areas and roads should be stabilized with appropriate temporary or permanent seeding according to specification in **Disturbed Area Stabilization (With Temporary Vegetation)** - **TS** and **Disturbed Area Stabilization (With Permanent Vegetation)** - **PS**, or with rock armoring according to specification in **Riprap** - **RR**.

Permanent Roads and Parking Areas

Permanent roads and parking areas should be designed and constructed according to

criteria established by the local authority and TDOT. Permanent roads and parking areas should be stabilized in accordance with this specification, applying an initial base course of gravel immediately following grading.

CONSTRUCTION SPECIFICATIONS

1. Trees, stumps, brush, roots, weeds, and other objectionable materials should be removed from the work area.

2. Unsuitable material should be removed from the roadbed and parking areas.

3. Grading, subgrade preparation, and compaction should be done as needed. Fill material should be deposited in layers not to exceed 9 inches and compacted with the controlled movement of compacting and earth moving equipment.

4. The roadbed and parking area should be graded to the required elevation. Subgrade preparation and placement of the surface layer should be in accordance with sound highway construction practice.

5. Structures such as culverts, pipe drops, or bridges should be installed to the lines and grades shown on the plans or as staked in the field. Culverts should be placed on a firm foundation. Selected backfill material should be placed around the culvert in layers not to

exceed 6 inches. Each layer should be properly compacted.

6. Roads should be planned and laid out with storm water flow paths in mind.

INSPECTIONS

Inspections of erosion control measures should be made before anticipated storm events (or series of storm events such as intermittent showers over one or more days) and within 24 hours after the end of a storm event of 0.5 inches or greater, and at least once every fourteen calendar days. Where sites have been finally or temporarily stabilized, such inspection may be conducted only once per month.

MAINTENANCE

Add top dressing of stone to roads and parking areas to maintain a gravel depth of 6 inches.

Remove any silt or other debris causing clogging of roadside ditches or other drainage structure.

Maintenance needs identified in inspections or by other means should be accomplished before the next storm event if possible, but in no case more than seven days after the need is identified.